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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/530,599	04/07/2005	Robert C. Guyer	D-4637	7165
22500 7590 03/13/2007 BAE SYSTEMS INFORMATION AND ELECTRONIC SYSTEMS INTEGRATION INC. 65 SPIT BROOK ROAD P.O. BOX 868 NHQ1-719 NASHUA, NH 03061-0868			EXAMINER LEE, PATRICK J	
			ART UNIT 2878	PAPER NUMBER

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/13/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

**Office Action Summary**

Application No.

10/530,599

Applicant(s)

GUYER ET AL.

Examiner

Patrick J. Lee

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 29 January 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07 April 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

**DETAILED ACTION**

***Response to Amendment***

1. This action is in response to amendment filed January 29, 2007.

***Claim Objections***

2. Claim 13 is objected to because of the following informalities:

With respect to claim 3, the phrase "when in the narrow field of view over that object when off-axis" is awkward and somewhat vague because the phrase "when off-axis" appears to refer to the object but it could also refer to the "narrow field of view". The words "over that" aid in the confusion over the language.

Appropriate correction is required.

***Claim Rejections - 35 USC § 112***

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

4. Claim 3 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

With respect to claim 3, the phrase "when in the narrow field of view over that object when off-axis" is awkward and somewhat vague because the phrase "when off-axis" appears to refer to the object but it could also refer to the "narrow field of view". The words "over that" aid in the confusion over the language.

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

7. Claims 1-2 & 4-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 5,770,850 to Bowen et al in view of "Understanding Camera Lenses" to Sean McHugh (<http://www.cambridgeincolour.com/tutorials/camera-lenses.htm>).

With respect to claim 1, Bowen et al disclose a device for tracking a light source (14) comprising: variable focal length lens (76) as fixed optics having a focal length that is varied electrically through the use of an electrically tunable focal length lens (see Bowen et al column 4, lines 42-43). Bowen discloses the use of longer focal lengths and shorter focal lengths (see Bowen et al column 4, lines 24-36). However, Bowen et al does not explicitly disclose the fact that a longer focal length will lead to a smaller

field of view and that a shorter focal length will lead to a larger field of view, McHugh discloses this in the section titled "Influence of Lens Focal Length". What McHugh discloses is known in the art and to modify the teachings of Bowen et al with those of McHugh would have been obvious to one of ordinary skill in the art in order to give the device taught by Bowen et al the versatility and flexibility to deal with different imaging situations. Also, while the modified Bowen et al does not explicitly disclose the application of the device to the field of tracking a threat using a directed countermeasure system, the application to threat tracking would have been obvious to one of ordinary skill in the art as intended use because the device taught by Bowen et al is used to track light sources (14), which are what missiles essentially are as they are a source of radiation that eventually gets tracked by the device.

With respect to claim 2, the modified Bowen et al disclose the field of view of the fixed optics as being wide for a shorter focal length and a narrower field of view for a longer focal length.

With respect to claim 4, the modified Bowen et al disclose the use of sensor array (34) as an IR focal plane array for imaging objects.

With respect to claim 5, the modified Bowen et al discloses the device as described in the discussion of the previous claims. However, the use of non-linear optics is not explicitly disclosed, but the use of non-linear optics is known in the art would have been obvious to one of ordinary skill in the art because such would allow for the optical phase to be conjugated and create holograms that would be consistent with the target pattern optical element (32) (see Bowen et al column 3, lines 1-8).

With respect to claim 6, the modified Bowen et al discloses the device as described in the discussion of the previous claims. However, the modified Bowen et al does not explicitly disclose the use of Foveal optics, but Foveal optics are known in the art and the use of them would have been obvious to one of ordinary skill in the art because such would allow for wide field of views necessary for the device to first identify the objects.

With respect to claims 7-9, the modified Bowen et al discloses the device as described in the discussion of the previous claims. However, the use of fixed optics to provide barrel or other distortions is not explicitly disclosed, but the use of fixed optics to provide barrel or other distortions is known in the art and would have been obvious to one of ordinary skill in the art because it would lead to image magnification decreasing with increasing distance from the optical axis – essentially a fisheye effect. Such would lead to a narrower field of view at an increased magnification.

With respect to claims 10 & 12, Bowen et al disclose a device for tracking a light source (14) comprising: variable focal length lens (76) as fixed optics having a focal length that is varied electrically through the use of an electrically tunable focal length lens (see Bowen et al column 4, lines 42-43). Bowen discloses the use of longer focal lengths and shorter focal lengths (see Bowen et al column 4, lines 24-36). However, Bowen et al does not explicitly disclose the fact that a longer focal length will lead to a smaller field of view and that a shorter focal length will lead to a larger field of view, McHugh discloses this in the section titled “Influence of Lens Focal Length”. What McHugh discloses is known in the art and to modify the teachings of Bowen et al with

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those of McHugh would have been obvious to one of ordinary skill in the art in order to give the device taught by Bowen et al the versatility and flexibility to deal with different imaging situations. Also, while the modified Bowen et al does not explicitly disclose the application of the device to the field of tracking a threat using a directed countermeasure system, the application to threat tracking would have been obvious to one of ordinary skill in the art as intended use because the device taught by Bowen et al is used to track light sources (14), which are what missiles essentially are as they are a source of radiation that eventually gets tracked by the device.

With respect to claim 11, the modified Bowen et al discloses the device as described in the discussion of the previous claims. However, the modified Bowen et al does not explicitly disclose the use of Foveal optics, but Foveal optics are known in the art and the use of them would have been obvious to one of ordinary skill in the art because such would allow for wide field of views necessary for the device to first identify the objects.

With respect to claims 13-14, Bowen et al disclose a device for tracking a light source (14) comprising: variable focal length lens (76) as fixed optics having a focal length that is varied electrically through the use of an electrically tunable focal length lens (see Bowen et al column 4, lines 42-43). Bowen discloses the use of longer focal lengths and shorter focal lengths (see Bowen et al column 4, lines 24-36). However, Bowen et al does not explicitly disclose the fact that a longer focal length will lead to a smaller field of view and that a shorter focal length will lead to a larger field of view, McHugh discloses this in the section titled "Influence of Lens Focal Length". What

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McHugh discloses is known in the art and to modify the teachings of Bowen et al with those of McHugh would have been obvious to one of ordinary skill in the art in order to give the device taught by Bowen et al the versatility and flexibility to deal with different imaging situations. Also, while the modified Bowen et al does not explicitly disclose the application of the device to the field of tracking a threat using a directed countermeasure system, the application to threat tracking would have been obvious to one of ordinary skill in the art as intended use because the device taught by Bowen et al is used to track light sources (14), which are what missiles essentially are as they are a source of radiation that eventually gets tracked by the device.

With respect to claim 15, the modified Bowen et al disclose the use of sensor array (34) as an IR focal plane array for imaging objects.

With respect to claim 16, the modified Bowen et al discloses the device as described in the discussion of the previous claims. However, the use of non-linear optics is not explicitly disclosed, but the use of non-linear optics is known in the art would have been obvious to one of ordinary skill in the art because such would allow for the optical phase to be conjugated and create holograms that would be consistent with the target pattern optical element (32) (see Bowen et al column 3, lines 1-8).

With respect to claim 17, the modified Bowen et al discloses the device as described in the discussion of the previous claims. However, the modified Bowen et al does not explicitly disclose the use of Foveal optics, but Foveal optics are known in the art and the use of them would have been obvious to one of ordinary skill in the art



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because such would allow for wide field of views necessary for the device to first identify the objects.

With respect to claims 18 & 20, Bowen et al disclose a device for tracking a light source (14) comprising: variable focal length lens (76) as fixed optics having a focal length that is varied electrically through the use of an electrically tunable focal length lens (see Bowen et al column 4, lines 42-43). Bowen discloses the use of longer focal lengths and shorter focal lengths (see Bowen et al column 4, lines 24-36). However, Bowen et al does not explicitly disclose the fact that a longer focal length will lead to a smaller field of view and that a shorter focal length will lead to a larger field of view, McHugh discloses this in the section titled "Influence of Lens Focal Length". What McHugh discloses is known in the art and to modify the teachings of Bowen et al with those of McHugh would have been obvious to one of ordinary skill in the art in order to give the device taught by Bowen et al the versatility and flexibility to deal with different imaging situations. Also, while the modified Bowen et al does not explicitly disclose the application of the device to the field of tracking a threat using a directed countermeasure system, the application to threat tracking would have been obvious to one of ordinary skill in the art as intended use because the device taught by Bowen et al is used to track light sources (14), which are what missiles essentially are as they are a source of radiation that eventually gets tracked by the device.

With respect to claim 19, the modified Bowen et al discloses the device as described in the discussion of the previous claims. However, the modified Bowen et al does not explicitly disclose the use of Foveal optics, but Foveal optics are known in the

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art and the use of them would have been obvious to one of ordinary skill in the art because such would allow for wide field of views necessary for the device to first identify the objects.

### ***Response to Arguments***

8. Applicant's arguments filed January 29, 2007 have been fully considered but they are not persuasive.

An ordinary reading of Bowen et al column 4, lines 39-43 would show that two options for the variable focal length lens (76) are possible: (1) one with the zoom lens; OR (2) the electrically tunable focal length lens. While applicant is correct that a zoom lens would not read on the claims because such constitute movable optics, applicant has failed to notice that Bowen et al does disclose the use of an electrically tunable focal length lens as stated in Bowen et al column 4, lines 42-43. Such a variable focal length lens would not require the use of moving objects because the application of a current would be sufficient to adjust the focal length. The electrically tunable focal length lens would provide the advantage of instant adjustment of the focal length without waiting for moving parts to be set in place.

### ***Conclusion***

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Patrick J. Lee whose telephone number is (571) 272-2440. The examiner can normally be reached on Monday through Friday, 8:00 am to 5:30 pm.

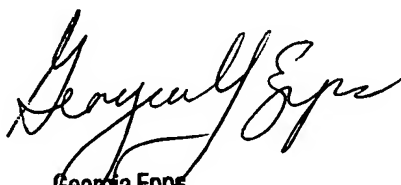
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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Georgia Epps can be reached on (571) 272-2328. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Patrick J. Lee  
Examiner  
Art Unit 2878

PJL  
February 21, 2007

  
Georgia Epps  
Supervisory Patent Examiner  
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